

Universal LightProbe Sensor and Fiber-Optic Probe Catalog

Optomistic Products' Universal LightProbes™ offer a **unique 2-part solution** that addresses almost every LED test requirement you may have.

This catalog contains data sheets for sensors and fiber-optic probes, installation accessories, plus information on sensor sensitivity. For further information or questions, don't hesitate to contact us at info@optomisticproducts.com



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Universal LightProbes - Two-Part Solution for LED Test

Optomistic Products' Universal LightProbes™ offer a **unique 2-part solution** that addresses almost every LED test requirement you may have.

Start by choosing a pre-programmed **sensor** for the type of test and output you require, then, combine it with an interchangeable **fiber-optic probe** to further customize the test for mechanical requirements and constraints.



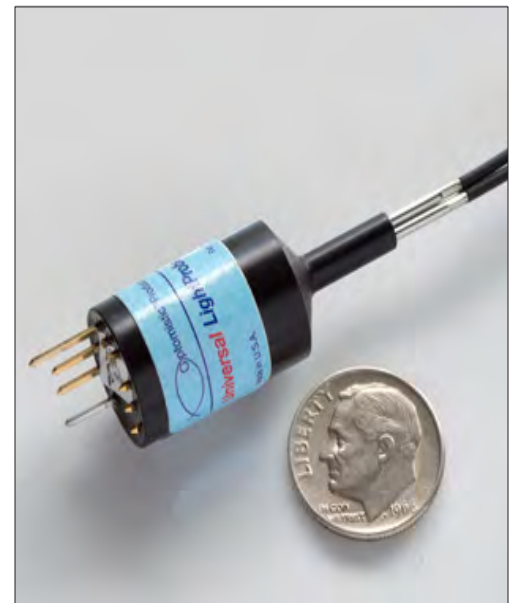
Sensors

Universal LightProbe Sensors are pre-programmed for various types of test, and are available with a choice of outputs.

Analog Output - Choose Penta, Spectra or Unicolor Sensors - each of these sensors test for both color and intensity. The best-selling Penta Sensor provides color-binning, the Spectra Sensor features user-defined color-boundaries, and the Unicolor Sensor is pre-programmed to sense a choice of any single color, or white, or IR or UV.

Digital Output - Choose Unicolor Digital Sensors to test a single color with a one-bit PASS/FAIL test output. Choose Blinx Digital Sensors for blinking LEDs, or Ultra-High Sensivity Sensors for very dim LEDs.

Serial Digital Output/USB Interface - Choose Spectra USB Sensor to test any color in the visual spectrum, and intensity.



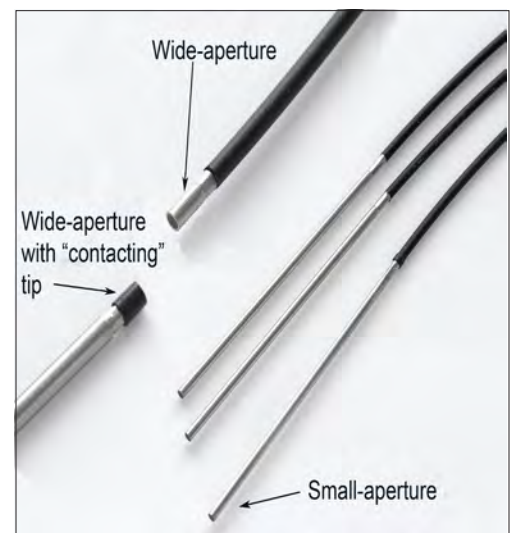
Fiber-optic Probes

Universal LightProbe Fiber-Optic Probes are be combined with the Universal LightProbe Sensor to further refine your test.

Small-aperture - Test LEDs as close as 0.050 inches on center. Includes the popular "Trident," which enables the cost-efficient test of 3 LEDs with a single sensor.

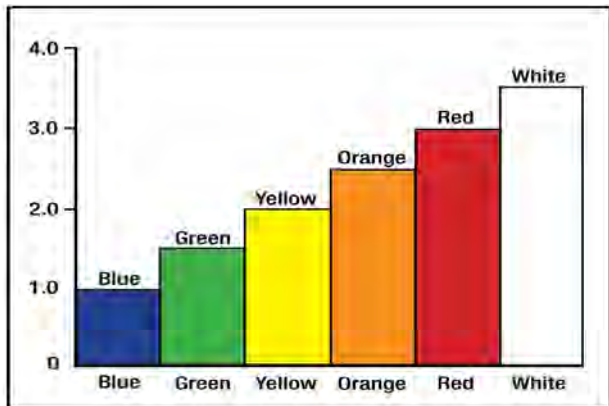
Wide-aperture - Captures 4x the amount of light as small-aperture. Great for testing dim LEDs, or to correct for misalignment errors.

Contacting Tips - Wide-aperture fiber-optic probes enable refined intensity measurement by ensuring a consistent distance between the LED and the fiber-optic probe tip.



Universal LightProbe™ Penta Sensor

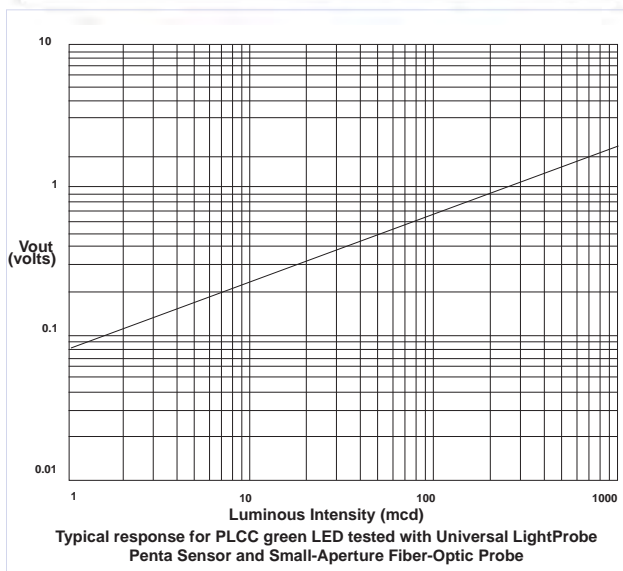
Optomistic Products' best-selling sensor, the Penta Sensor provides analog voltage outputs for both color and intensity, and features built-in color binning, eliminating the need to convert LED wavelength to visual color in the ATE software, saving valuable processing time.



Color Response

- Test for the five main LED colors, plus white
- Unambiguous and stable analog voltage output
- Color output is independent of LED intensity

Blue:	1.0 volts
Green:	1.5 volts
Yellow/Amber:	2.0 volts
Orange:	2.5 volts
Red:	3.0 volts
White:	3.5 volts



Intensity Response

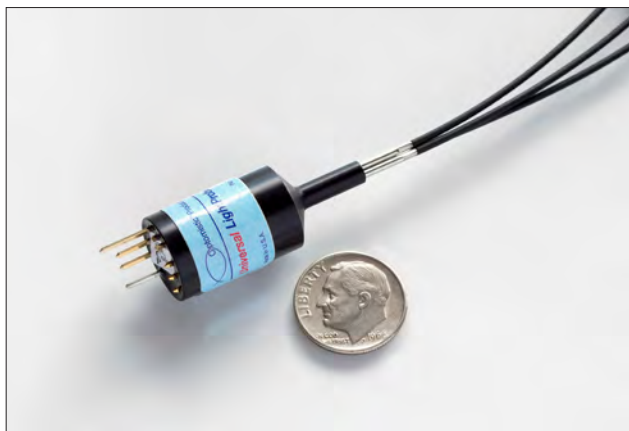
- Analog output ranging from 0 to 4 volts
- Corresponds to LED's luminous intensity in millicandelas (as provided in most LED manufacturers' specifications)
- C.I.E. photopic-curve-corrected
- Tests PLCC surface-mount LEDs up to 3,000mcd (with a small aperture fiber-optic probe)
- Read-out < 50mV indicates under-ranging - the LED is too dim; Penta High-Sensitivity Sensors are available
- Read-out > 4 volts indicates over-ranging - the LED is too bright; Penta Low-Sensitivity Sensors are available
- Note: Intensity response depends on size of LED, the aperture of the fiber-optic probe and the distance between the probe tip and the LED emitter; for more information on Sensor Sensitivity Responses in millicandelas, please see Application Note 35.

Sensor Characteristics

- Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.
- Withstands up to 40 volts, & reverse polarity to -18 volts
- Sensor size: 0.560 inches diameter x 1.38 inches long with four standard wire-wrap pins - see Sensor Specifications
- Typical response time: <340mS for color and intensity simultaneously
- Easy install with one-hole fixing clamps available
- Operating temperature range: 0°C to 70°C
- Output Loads: 'Int.' & 'Color'- 2Kohms min., 100pF, max.

Fiber-Optic Probes

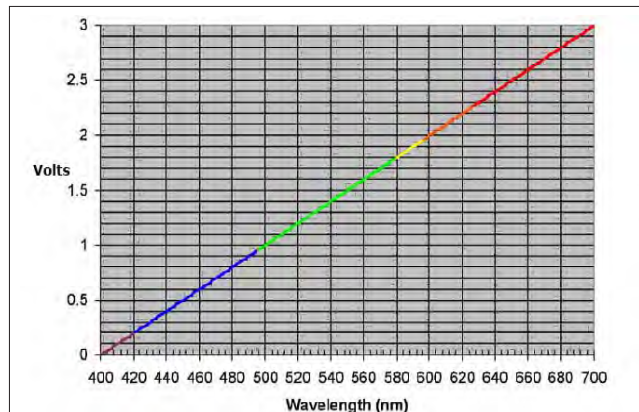
- Can utilize any Universal LightProbe Fiber-optic Probe
- Test LEDs as close as 0.050 on center
- See Universal LightProbe Fiber-optic Probe data sheets



Part Number: ULP PCI/V

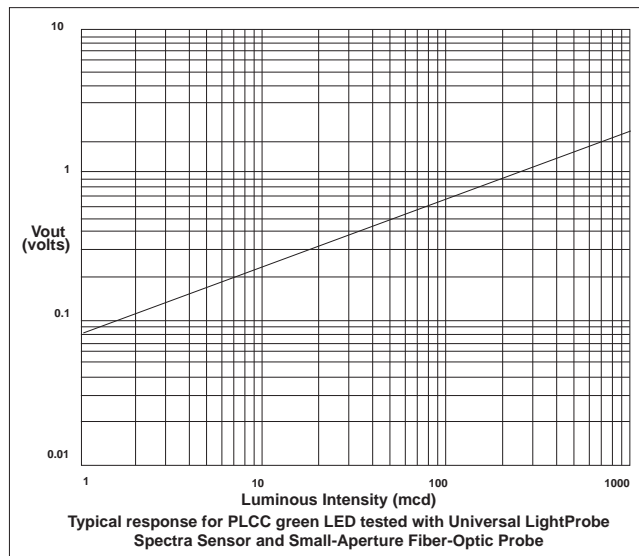
Universal LightProbe™ Spectra Sensor

Universal LightProbe Spectra Sensors test a wide range of LED intensity, and any color in the visual spectrum, plus white. Universal LightProbe Spectra Sensors are well-suited for the test of “boundary” color LEDs, as they allow the user to set their own PASS/FAIL limits for color.



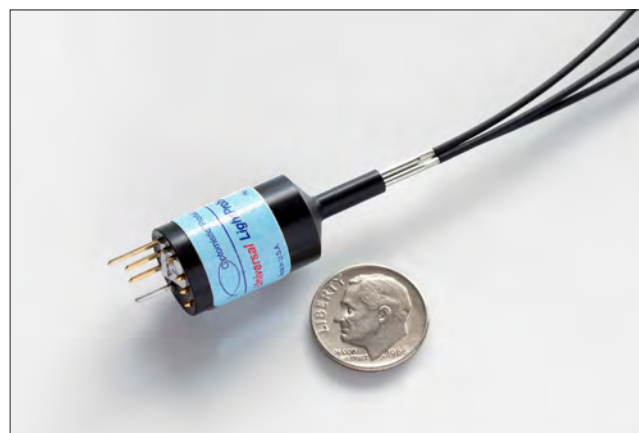
Color Response

- Test any LED color wavelength from 400 to 700nm + white
- Unambiguous and stable analog voltage output proportional to LED wavelength
- LED Wavelength = $[100(V_{out} + 4)]nm$
- For white, the voltage output is 3.5volts
- Enables user to set their own PASS/FAIL limits
- Color output is independent of LED intensity
- Eliminates need to convert LED wavelength as a pulse rate
- Improves the overall response time to test an LED



Intensity Response

- Analog output ranging from 0 to 4 volts
- Corresponds to LED's luminous intensity in millicandelas (as provided in most LED manufacturers' specifications)
- C.I.E. photopic-curve-corrected
- Tests PLCC surface-mount LEDs up to 3,000mcd (using a small aperture fiber-optic probe)
- Read-out < 50mV indicates under-ranging - LED is too dim
- Read-out > 4 volts indicates over-ranging - the LED is too bright; Spectra Low-Sensitivity Sensors are available
- Note: Intensity response depends on size of LED, the aperture of the fiber-optic probe and the distance between the probe tip and the LED emitter; for more information on Sensor Sensitivity Responses in millicandelas, please see Application Note 35.



Sensor Characteristics

- Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.
- Withstands up to 40 volts, & reverse polarity to -18 volts
- Sensor size: 0.560" diameter x 1.38" long with four standard wire-wrap pins - see Sensor Specifications
- Easy install with one-hole fixing clamps available
- Typical response time: <450mS for color and intensity simultaneously
- Output Loads: 'Int.' & 'Color'- 2Kohms min., 100pF, max.
- Operating temperature range: 0°C to 70°C

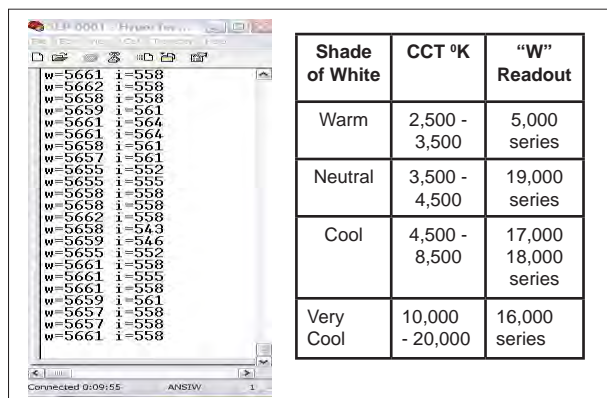
Fiber-Optic Probes

- Can utilize any Universal LightProbe Fiber-optic Probe
- Test LEDs as close as 0.050 on center
- See Universal LightProbe Fiber-optic Probe data sheets

Part Number: ULP WBI/V

Universal LightProbe™ Spectra USB Sensor

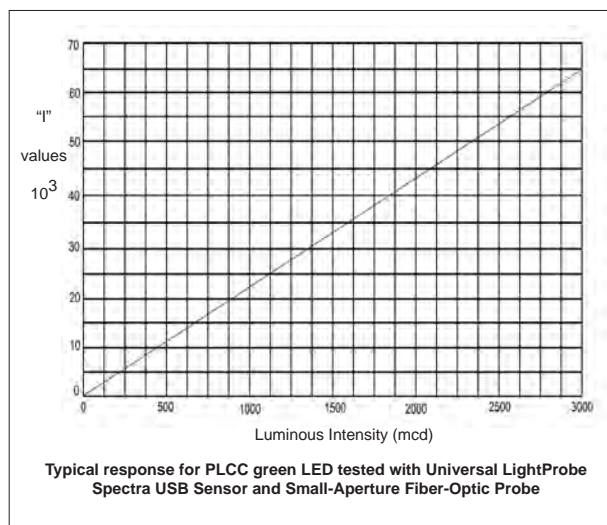
Universal LightProbe Spectra USB Sensors test a wide range of LED intensities and any color in the visual spectrum, plus white, providing a linear response with a serial digital output via a direct connection to a PC USB port.



Shade of White	CCT °K	"W" Readout
Warm	2,500 - 3,500	5,000 series
Neutral	3,500 - 4,500	19,000 series
Cool	4,500 - 8,500	17,000 series
Very Cool	10,000 - 20,000	16,000 series

Color and White Response

- Provides serial-digital output of LED color
- "w" = color wavelength in tenths of nanometers
- Or, for white, "w" = a value that corresponds to CCT (see Application Note 39)
- Display/print-out the linear response with Windows® HyperTerminal or Tera Term software (included with purchase)
- Color output is independent of LED intensity
- Unique streaming technology enables LED color wavelength (and intensity) to be rapidly and simultaneously accessed by a PC and displayed/printed-out



Intensity Response

- Provides serial digital output for intensity
- "i" = intensity, from 0 to 65,0000
- Output corresponds to LED luminous intensity in millicandelas, as seen in most LED manufacturers' specifications
- C.I.E. photopic-curve-corrected
- Tests PLCC surface-mount LEDs up to 3,000mcd (using a small aperture fiber-optic probe)
- Read-out of 4 indicates under-ranging - LED is too dim
- Read-out > over 65,000 indicates over-ranging - LED too bright; Spectra USB Low-Sensitivity Sensors available
- Note: Intensity response depends on size of LED, the aperture of the fiber-optic probe and the distance between the probe tip and the LED emitter; for more information on Sensor Sensitivity Responses in millicandelas, please see Application Note 35.



Sensor Characteristics

- Sensor size: 0.560 inches diameter x 1.38 inches long
- A standard mini-type B five-pin USB connector is integrated into the Spectra USB Sensor, and a standard USB Cable is provided
- Typical response time: < 250mS for color and intensity as a serial bit-stream (19200 baud rate)
- Operating temperature range: 0°C to 70°C

Fiber-Optic Probes

- Can utilize any Universal LightProbe Fiber-optic Probe
- Test LEDs as close as 0.050 on center
- See detail on Universal LightProbe Fiber-optic Probes

Part Number: ULP SPECTRA USB

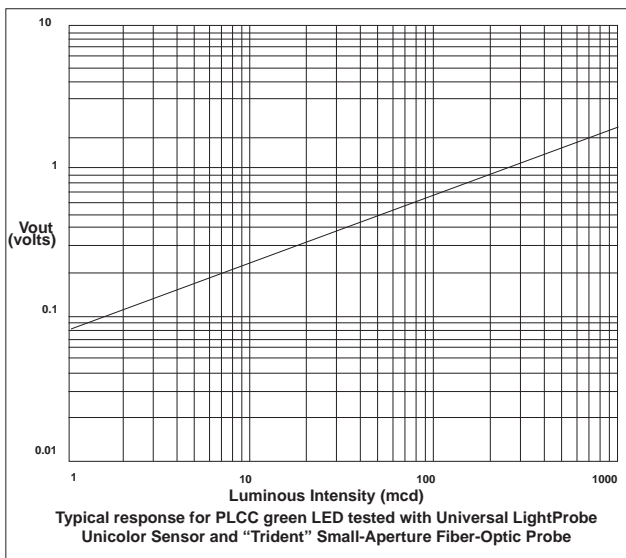
Universal LightProbe™ Unicolor Sensor

Universal LightProbe Unicolor Sensors are designed for the color and intensity test of any single one of the five main LED colors (blue, green, yellow, orange, and red) plus white, Infrared and UV.

Specific Color Sensor:	Output Voltage							
	B	G	Y	O	R	W	IR	UV
Blue	I_v	0	0	0	0	0	0	0
Green	0	I_v	0	0	0	0	0	0
Yellow	0	0	I_v	0	0	0	0	0
Orange	0	0	0	I_v	0	0	0	0
Red	0	0	0	0	I_v	0	0	0
White	0	0	0	0	0	I_v	0	0
IR	0	0	0	0	0	0	I_c	0
UV								I_c

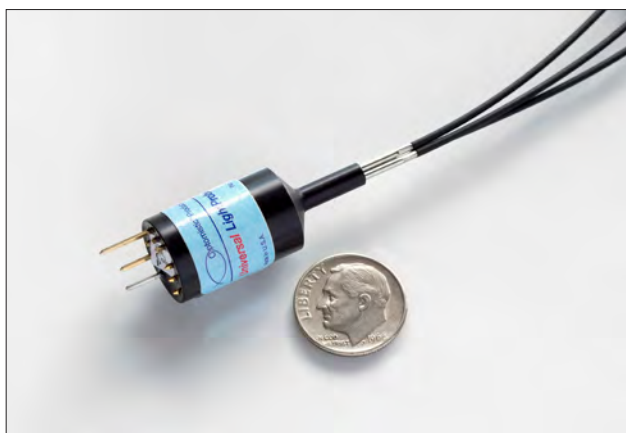
Color Response

- Analog output ranging from 0 to 4 volts
- Output is proportional to LED intensity *only* if the LED is the color specified and it is “ON”
- Tests five main LED colors - blue, green, yellow/amber, orange, or red, plus white
- Tests Infrared LEDs/emitters 700nm to 1,000nm
- Tests UV LEDs/emitters 365nm to 400nm
- Sensor is insensitive to the “wrong” color
- Note: IR LightSources, emitting specific IR wavelengths, are also available



Intensity Response

- Analog output ranging from 0 to 4 volts
- Corresponds to LED’s luminous intensity in millicandelas (as provided in most LED manufacturers’ specifications)
- C.I.E. photopic-curve-corrected for visual colors
- Tests PLCC surface-mount LEDs up to 3,000mcd (using a small aperture fiber-optic probe)
- Read-out < 50mV indicates under-ranging - LED is too dim
- Read-out > 4 volts indicates over-ranging - the LED is too bright; Unicolor Low-Sensitivity Sensors are available
- Note: Intensity response depends on size of LED, the aperture of the fiber-optic probe and the distance between the probe tip and the LED emitter; for more information on Sensor Sensitivity Responses in millicandelas, please see Application Note 35.



Sensor Characteristics

- Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.
- Withstands up to 40 volts, & reverse polarity to -18 volts
- Sensor size: 0.560 inches diameter x 1.38 inches long with three standard wire-wrap pins - see Sensor Specifications
- Typical response time: < 315mS for intensity of correct color
- Easy install with one-hole fixing clamps available
- Output Loads: ‘Int.’- 2Kohms min., 100pF, max.
- Operating temperature range: 0°C to 70°C

Fiber-Optic Probes

- Can utilize any Universal LightProbe Fiber-optic Probe
- Test LEDs as close as 0.050 on center
- See Universal LightProbe Fiber-optic Probe data sheets

Part Number: ULP SCI/V

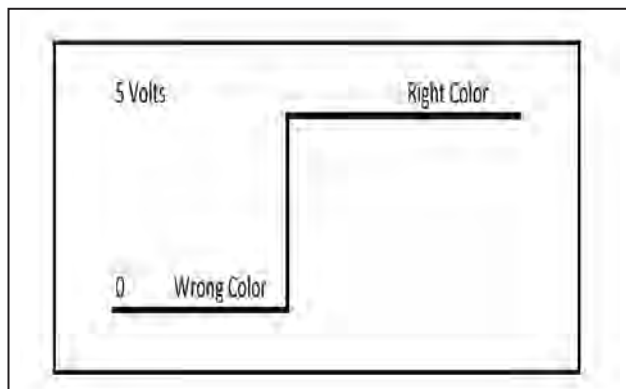
Universal LightProbe™ Unicolor Digital Sensor

Universal LightProbes Unicolor Digital Sensors are designed for the simple on/off test and color check of a single color LED, with a one-bit digital output, quickly determining PASS/FAIL status without further processing by the ATE.

Specific Color Sensor	Output Voltage					
	B	G	Y	O	R	W
LED Color:						
Blue	5	0	0	0	0	0
Green	0	5	0	0	0	0
Yellow	0	0	5	0	0	0
Orange	0	0	0	5	0	0
Red	0	0	0	0	5	0
White	0	0	0	0	0	5

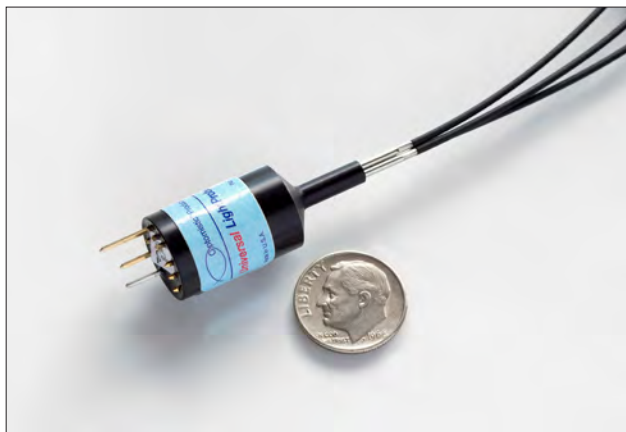
Color Response

- Tests a target LED's color by providing a Logic "1" voltage output (5 volts) *only* if the LED is the color specified and it is "ON"
- Tests five main LED colors: blue, green, yellow/amber, orange, or red, plus white
- Sensor is insensitive to the "wrong" color
- Provides optimum ATE/ICT Pin Board/memory interface for fast digital burst mode LED test



Intensity

- Unicolor Digital Sensors do not provide an intensity output
- When detecting the correct color, Unicolor Digital Sensors respond to a wide dynamic range of LED intensity
- No adjustments for intensity are necessary



Sensor Characteristics

- Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.
- Withstands up to 40 volts, & reverse polarity to -18 volts
- Sensor size: 0.560" diameter x 1.38" long with three standard wire-wrap pins - see Sensor Specifications
- Typical response time: < 320mS
- Easy install with one-hole fixing clamps available
- Signal Output Load: 20mA max. (Source/Sink). Non-inductive
- Operating temperature range: 0°C to 70°C

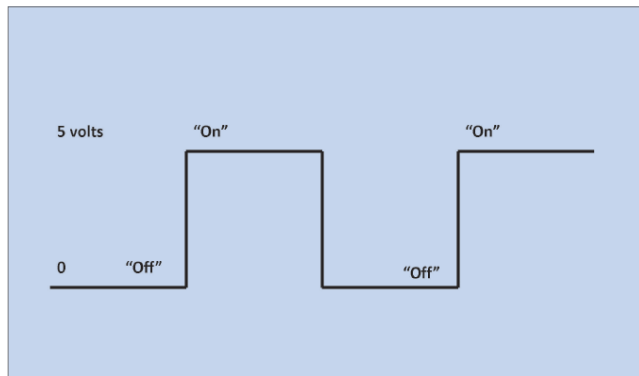
Fiber-Optic Probes

- Can utilize any Universal LightProbe Fiber-optic Probe
- Test LEDs as close as 0.050 on center

Part Number: ULP SCC

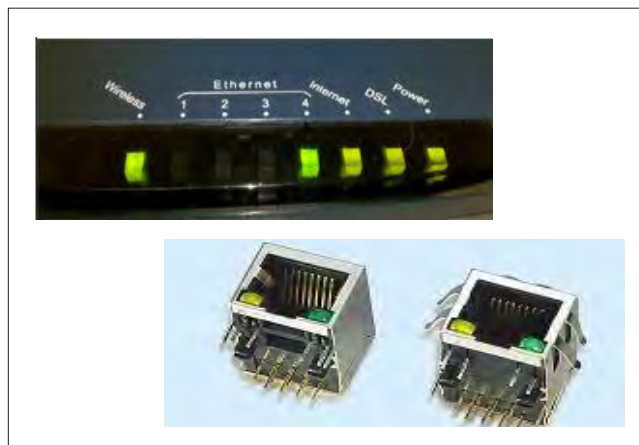
Universal LightProbe™ Blinx Digital Sensor

Universal LightProbes Blinx Digital Sensors are fast-response-time sensors, designed for the simple ON/OFF test of any color blinking/pulsed or stable LED, for fast results with a digital output.



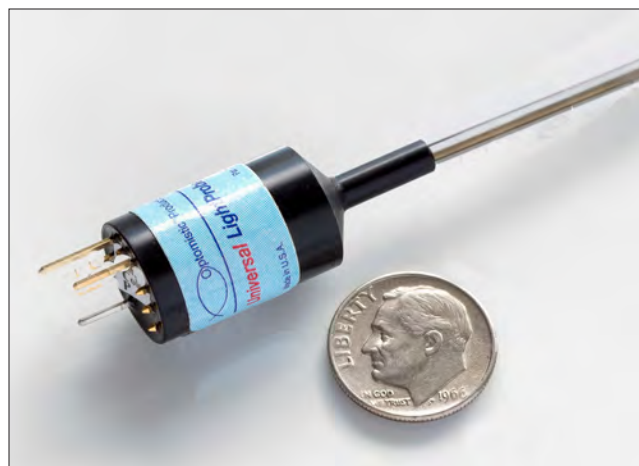
ON/OFF Response

- Tests the ON/OFF status of any color LED, from dim to very bright
- Tests stable or blinking/pulsed LEDs, up to a rate of 15 Hz, typically, and higher rates for brighter LEDs
- Provides a Logic "1" output of 5 volts only if the LED is ON and a Logic "0" if the LED is OFF
- "Color-blind" sensor will check the ON/OFF status of any color LED
- Provides the simplest and fastest 1-bit digital interface to automatic test equipment



Intensity

- Blinx Digital Sensors do not provide an intensity output
- Blinx Digital Sensors respond to a wide dynamic range of LED intensity without adjustment
- Will test surface-mount LEDs of 0.125 mcd minimum, at a blinking rate of 15Hz
- Will test finished product LED displays, e.g. RJ45 T-1 / 3mm LEDs of 0.5 mcd min. at a blinking rate of 15Hz, or higher for brighter LEDs



Sensor Characteristics

- Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.
- Withstands up to 40 volts, & reverse polarity to -18 volts
- Sensor size: 0.560 inches diameter x 1.38 inches long with three standard wire-wrap pins - see Sensor Specifications
- Response time: < 15mS. Shorter for brighter LEDs
- Easy install with one-hole fixing clamps available
- Signal Output Load: 20mA max. (Source/Sink). Non-inductive
- Operating temperature range: 0°C to 70°C

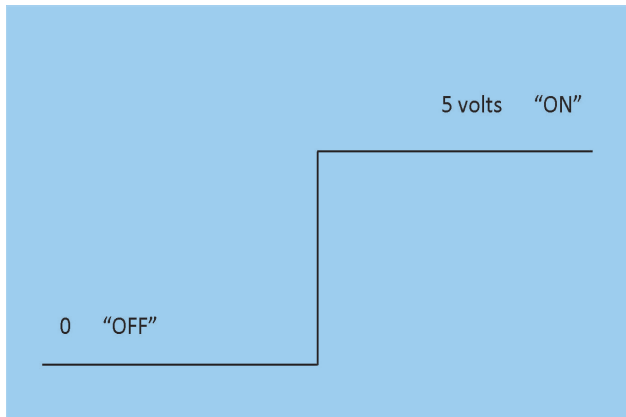
Fiber-Optic Probes

- Wide-aperture fiber-optic probe recommended
- See Universal LightProbe Fiber-optic Probe data sheets

Part Number: ULP BLINX

Universal LightProbe™ Ultra-High Sensitivity Sensor

Designed for the test of very dim LEDs, as low as 0.18 mcd minimum, and including very low light-level LED-illuminated action-indicator switches, controls and status indicators for night/dark viewing in automobile interiors.



ON/OFF Response

- Tests the ON/OFF status of any color LED
- Provides a Logic "1" output of 5 volts only if the LED is ON and a Logic "0" if the LED is OFF
- "Color-blind" sensor will check the ON/OFF status of any color LED
- Provides the simplest and fastest 1-bit digital interface to automatic test equipment, requiring no further PASS/FAIL processing by the ATE software



Intensity

- Ultra-High Sensitivity Sensors do not provide an intensity output
- Ultra-High Sensitivity Sensors respond to a wide dynamic range of LED intensity without adjustment
- Will test surface-mount LEDs of 0.01 mcd minimum
- Will test finished product LED displays, e.g. RJ45 T-1 / 3mm LEDs of 0.15 mcd minimum



Sensor Characteristics

- Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.
- Withstands up to 40 volts, & reverse polarity to -18 volts
- Sensor size: 0.560" diameter x 1.38" long with three standard wire-wrap pins - see Sensor Specifications
- Typical response time: < 190mS
- Easy install with one-hole fixing clamps available
- Signal Output Load: 20mA max. (Source/Sink). Non-inductive
- Operating temperature range: 0°C to 70°C

Fiber-Optic Probes

- Recommend the use of wide-aperture stainless-steel encased fiber-optic probes with contacting tips
- See Universal LightProbe Fiber-optic Probe data sheets

Part Number: ULP UHS

Universal LightProbe Sensor Specifications and Characteristics

All Universal LightProbe Sensors share the same form, and are then pre-programmed to suit specific LED test requirements. The small size and non-conductive housing is specifically designed to accommodate today's high-density test fixtures. Universal LightProbe Sensor characteristics, pin-out information, and typical response time for each sensor is outlined below. For dimensions of the pin locations for each specific sensor, or for 3-D SolidWorks files, please contact us.

Universal LightProbe Sensor Characteristics:

Sensor size: 0.560 inches dia. x 1.38 in. long

Operating temperature range: 0°C to 70°C

Power consumption: Operates from +5, 12, 24 or 28 volts D.C., at 5mA max.

Voltage protection: Withstands up to +40 volts, & reverse polarity to -18 volts

Output Pins: 3 or 4 gold-plated (depending on sensor type) standard wire-wrap pins (0.025 in. sq.)



PENTA and SPECTRA SENSORS

Four standard wire-wrap pins:

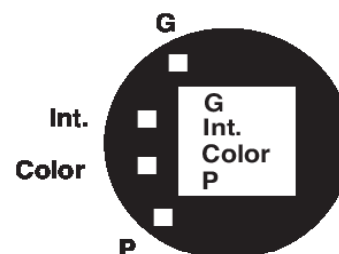
G - Ground - common for analog output and power input

I - Intensity of LED under test (relative)

C - Color of LED under test

P - DC Power Input, +5, 12, 24, or 28 volts

Typical response times: Penta <340mS; Spectra <450mS color & intensity outputs simultaneously



UNICOLOR SENSOR

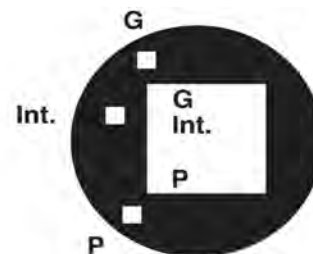
Three standard wire-wrap pins:

G - Ground: common for analog output and power input

I - Intensity of correct color LED under test (relative)

P - DC Power Input, +5, 12, 24, or 28 volts

Typical response time: <315mS color & intensity output simultaneously



UNICOLOR DIGITAL, BLINX DIGITAL and ULTRA HIGH-SENSITIVITY (UHS) SENSORS

Three standard wire-wrap pins:

G - Ground: common for digital output and power input

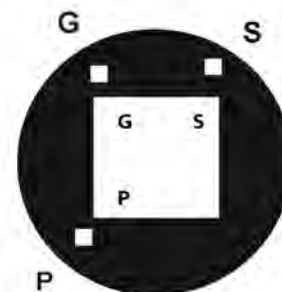
S - Status of LED. Unicolor Digital: correct=Logic '1' (5v); incorrect=Logic 0 (0v)

Blinx & UHS: ON=Logic '1' (5v); OFF=Logic 0 (0v)

P - DC Power Input, +5, 12, 24, or 28 volts

Typical response times: Unicolor Digital: <320mS UHS: <190mS

Blinx Digital: <15mS, shorter for brighter LEDs



SPECTRA USB SENSOR

Connection is a USB port; sensor includes compatible USB cable

Typical response time: <250mS color & intensity output as a serial bit-stream (19200 baud rate)



Universal LightProbe™ Sensor Sensitivity Selection

Optomistic Products offers a selection of Universal LightProbe sensors for testing various intensity LEDs. Testing a very bright LED, for example, might require a “Low Sensitivity” (LS) sensor, to ensure that the sensor does not “over-range,” and testing a dim LED might require a “High-sensitivity” (HS) sensor to detect the LED. Which sensor should be selected is determined by various factors, including the size of LED under test, the type of Universal LightProbe Fiber-optic Probe being used for the test, the air-gap between the fiber-optic probe tip and the LED under test, or even if the LED is being tested through translucent material of unknown transmission characteristics. The chart below serves as a guide to determine which sensor and fiber-optic probe is best for your specific test application, by giving the approximate sensitivity ranges. To determine the intensity of the LED under test, check the LED manufacturer’s data sheet for luminous intensity in millicandelas for a specific forward current.

Universal LightProbe Sensor Type	Universal LightProbe Fiber-Optic Probe Type	Circuit-Board Test		Finished-Product Test
		Surface-Mount Chip LEDs	Surface-Mount PLCC LEDs	Through-Hole T-1 3/4 (5mm) Diffused LEDs
Penta, Spectra or Unicolor Sensor	small-aperture probe (3mm air-gap)	1 mcd to 3,000 mcd	1 mcd- 3,000 mcd	10 mcd to 20,000 mcd
	wide-aperture probe (Contacting tip or 1mm air-gap)	0.1 mcd to 200 mcd	0.1 mcd to 275 mcd	3 mcd to 6,000 mcd
Penta, Spectra or Unicolor Low-Sensitivity Sensor (LS)	small-aperture probe (3mm air-gap)	5 mcd to 10,000 mcd	5 mcd to 10,000 mcd	40 mcd to 80,000 mcd
	wide-aperture probe (Contacting tip or 1mm air-gap)	0.3 mcd to 800 mcd	0.5 mcd to 1,000 mcd	10 mcd to 25,000 mcd
Penta, Spectra or Unicolor Very-Low Sensitivity Sensor (VLS)	small-aperture probe (3mm air-gap)	20 mcd to 45,000 mcd	20 mcd to 45,000 mcd	125 mcd to 315,000 mcd
	wide-aperture probe (Contacting tip or 1mm air-gap)	2 mcd to 3,200 mcd	2 mcd to 4,000 mcd	40 mcd to 95,000 mcd
Penta High-Sensitivity Sensor (HS) (Penta sensors only)	wide-aperture probe (Contacting tip or 1mm air-gap)	N/A	N/A	1 mcd to 15 mcd (1.0 to 4 volts)
Spectra USB or ASCII Sensors	small-aperture probe (3mm air-gap)	0.5 mcd to 3,400 mcd	0.5 ucd to 3,000 mcd	3 mcd to 18,300 mcd
	wide-aperture probe (Contacting tip or 1mm air-gap)	0.03 mcd to 200 mcd	0.04 mcd to 260 mcd	0.5 mcd to 3,000 mcd
Spectra USB or ASCII Sensors Low-Sensitivity Sensor (LS)	small-aperture probe (3mm air-gap)	2 mcd to 13,600 mcd	2 mcd to 12,000 mcd	12 mcd to 73,200 mcd
	wide-aperture probe (Contacting tip or 1mm air-gap)	0.12 mcd to 800 mcd	0.2 mcd to 1,000 mcd	2.0 mcd to 12,000 mcd
Spectra USB or ASCII Sensors Very Low-Sensitivity Sensor (VLS)	small-aperture probe (3mm air-gap)	8 mcd to 54,400 mcd	8 mcd to 48,000 mcd	48 mcd to 293,000 mcd
	wide-aperture probe (Contacting tip or 1mm air-gap)	0.5 mcd to 3,200 mcd	1.0 mcd to 4,000 mcd	8 mcd to 48,000 mcd
Blinx Digital Sensor (15 Hz. Max. LED blink rate)	wide-aperture probe (Contacting tip or 1mm air-gap)	0.125 mcd min.	0.130 mcd min.	1.5 mcd min. (0.5 mcd min RJ45 T1 LEDs)
Blinx Digital Sensor High Sensitivity (HS) 5 Hz. Max. LED blink rate	wide-aperture probe (Contacting tip or 1mm air-gap)	0.03 mcd min.	0.03 mcd min.	0.46 mcd min. (0.15 mcd min RJ45 T1 LEDs)
Ultra-High Sensitivity Sensor (UHS) Does not detect color	wide-aperture probe (Contacting tip)	0.01 mcd min	0.01 mcd min	0.25 mcd (0.15 mcd min RJ45 T-1 LEDs)

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Universal LightProbes - Installation Accessories

Universal LightProbes™ Sensors and Fiber-optic Probes are easy and fast to install. Use one-hole fixing clamps for the sensors and flexible cable fiber-optic probes. Stainless-steel encased fiber-optic probes support both the sensor and the fiber-optic probe without clamps. The Universal LightProbe Connector Cable is also available for quick and easy sensor wiring to ATE interface.

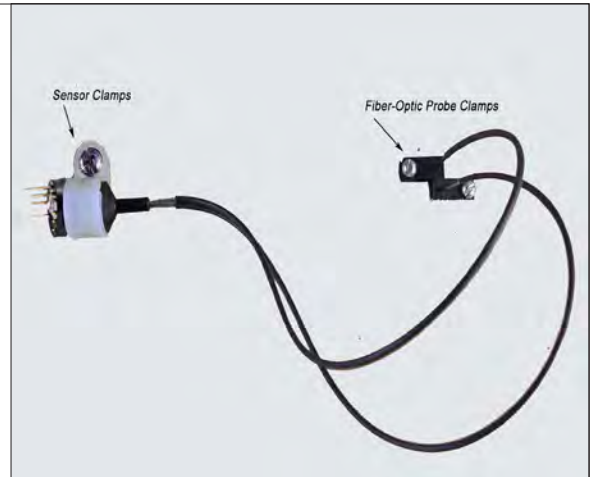
Mounting Clamps

- **Sensors:** Use a single clamp for the sensor with a single #10-ANSI screw for one-hole fixing
- **Flexible Fiber-optic Probes with Non-contacting Tips:** Individual clamps secured to the probe plate, allow the height of the probe tips above the LEDs to be adjusted
- **Flexible Fiber-optic Probes with Contacting Spring Tips:** Use individual clamps and set and secure with the correct pre-travel

Part Numbers

Sensor Clamp: ULP CP

Fiber-optic Probe Clamps: LCP-XX ("XX = diameter of fiber-optic probe in mm, such as 12, 27 or 34)



Stainless-Steel Encased Fiber-optic Probes

Stainless steel encasing supports both the fiber-optic probe and sensor; for right-angled stainless-steel encased fiber-optic probes, sensors can be rotated to test closely spaced LEDs



Universal LightProbe Connector Cable

- Fool-proof Sensor Wiring

Color-coded and labeled wires, corresponding to sensor pin labelling, with separate sheathing of individual sensor wires for easy identification at the ATE interface

- Time-Saving

Provides a quick-change of sensors, saving time over either wire-wrap or soldered connections

- Reduces Overall Fixture Assembly Cost

Eliminates costly wiring errors and de-debug time and provides automatic dressing of specific sensor wires.

- Protects Sensor from Heat Damage

Eliminates the possibility of sensor damage caused by excessive heat when soldering connections

- Long, Durable, Flexible and Tested

Long-length (48 inches/1220mm) allows for trimming to suit most fixtures and 26 AWG stranded conductors for flexibility and durability. End-to-end continuity tested and pull tested

Part Number: ULP CC



Universal LightProbes - Fiber-Optic Probes

After choosing a pre-programmed **sensor** for the type of test and output you require, then choose a **fiber-optic probe** to further customize the test for mechanical requirements and constraints.



Small-Aperture Fiber-Optic Probes for Closely Spaced LEDs

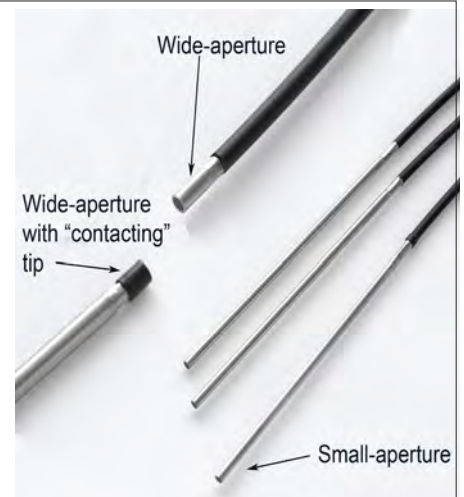
Test of LEDs spaced as closely as 0.050 inches on center. Includes the popular Trident, for the sequential test of three LEDs with a single sensor for a significant cost savings.

Wide-Aperture Fiber-Optic Probes for Dim or Misaligned LEDs

Allowing four times the amount of light input as small-aperture probes, compensate for dim LEDs and potential misalignment errors in ATE test. Great for finished-product displays such as illuminated switch alpha-numeric icons.

Wide-Aperture Fiber-Optic Probes with Contacting Tips for Refined Intensity Measurement

The insulated, "contacting" spring-tipped fiber-optic probes are provided for more refined intensity LED measurement. By enabling the contact of the probe tip to the LED, we eliminate the variations in intensity measurement that can be caused by variations in the working distance between the LED and the probe tip.



Probe Part Numbers

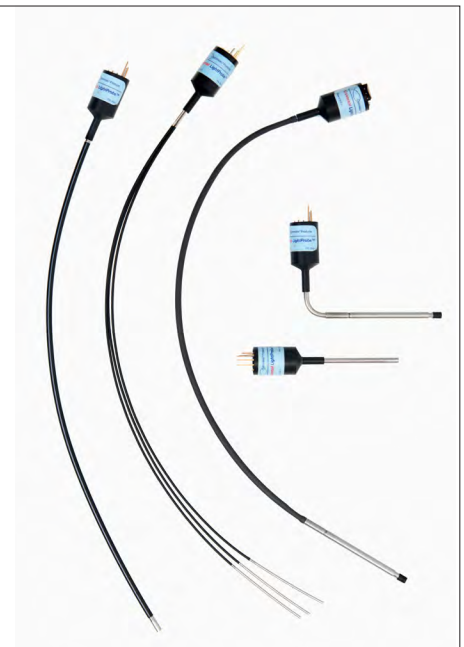
Below are sample part numbers and what they indicate.

250SF-34-LL-WA-CT

- 250 Indicates the length of the cable in millimeters
- SF Indicates the type of special cable, in this case, SuperFlex
- 34 Indicates the diameter of the probe tip, in this case, 3.4mm
- LL Indicates the length of the probe tip, in this case, Long Length - dimensions available on individual data sheets
- WA Indicates the aperture of the probe, in this case "wide aperture," could also be SA, or "small aperture" with smaller diameter probe
- CT Indicates a "contacting" probe tip

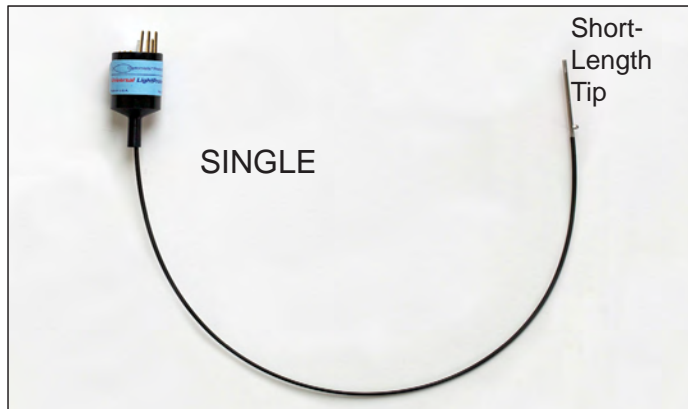
XXX-27-LL-WA

- XXX Indicates stainless-steel encased rigid probe
- 27 Indicates the diameter of the probe/tip, in this case 2.7mm
- LL Indicates the length of the probe tip, in this case, Long Length - dimensions available on individual data sheets
- WA Indicates the aperture of the probe, in this case "wide aperture"

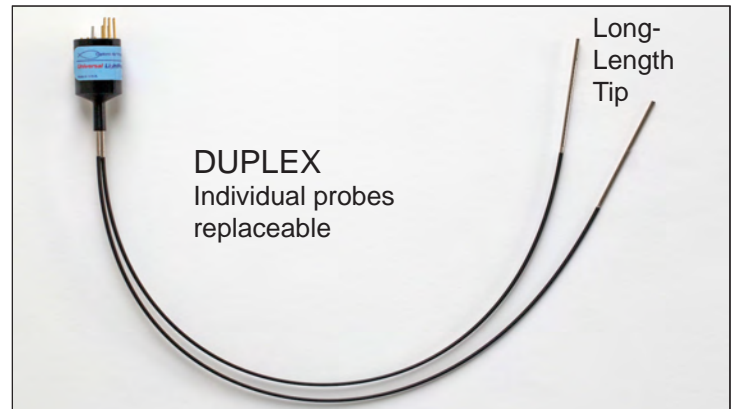


Universal LightProbe™ Small-Aperture Fiber-Optic Probes

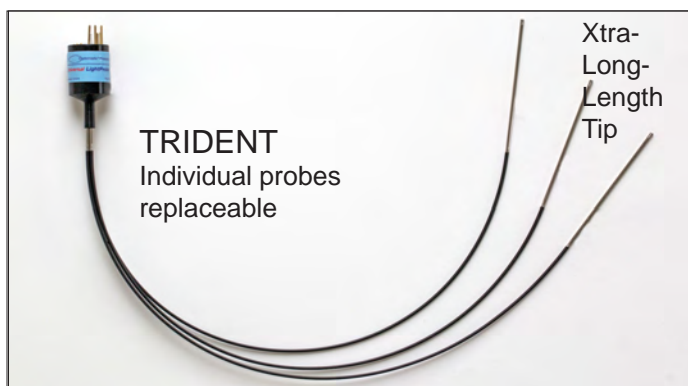
Small aperture probes with non-contacting tips are ideal for testing closely-spaced LEDs. “Duplex” and “Trident” fiber-optic probes provide substantial cost savings, enabling the *sequential* test of 2 or 3 LEDs for the price of a single sensor (LEDs must be turned on one-at-a-time).



- Flexible cable: 1 x 9.84in./250mm long
- Probe tip diameter: 0.050in./1.27mm
- Probe tip type: stainless-steel non-contacting
- LEDs spacing: not less than 0.050in./1.27mm
- Air-gap: 1mm min. recommended
- Probe tip lengths/Part Numbers:
- Short (SL): 1.25in./28.5mm **PN: 250-12-SL-SA**
- Long (LL): 1.75in./44.4mm **PN: 250-12-LL-SA**
- Xtra long (XLL): 2.25in./57mm **PN: 250-12-XLL-SA**



- Flexible cables: 2 x 9.84in./250mm long
- Probe tip diameter: 0.050in./1.27mm
- Probe tip type: stainless-steel non-contacting
- LEDs spacing: not less than 0.050in./1.27mm
- Air-gap: 1mm min. recommended
- LEDs must be turned on and tested one-at-a-time
- Probe tip lengths/Part Numbers:
- Short (SL): 1.25in./28.5mm **PN: 250D-12x12-SL-SA**
- Long (LL): 1.75in./44.4mm **PN: 250D-12x12-LL-SA**
- Xtra long (XLL): 2.25in./57mm **PN: 250D-12x12-XLL-SA**



- Flexible cables: 3 x 9.84in./250mm long
- Probe tip diameter: 0.050in./1.27mm
- Probe tip type: stainless-steel non-contacting
- LEDs spacing: not less than 0.050in./1.27mm
- Air-gap: 1mm min. recommended
- LEDs must be turned on and tested one-at-a-time
- Probe tip lengths available/Part Numbers:
- Short (SL): 1.25in./28.5mm **PN:250T-12x12-SL-SA**
- Long (LL): 1.75in./44.4mm **PN:250T-12x12-LL-SA**
- Xtra long (XLL): 2.25in./57mm **PN:250T-12x12-XLL-SA**



- Flexible cables: 3 x 9.84in./250mm long
- Probe tip diameter: 0.050in./1.27mm
- Probe tip type: stainless-steel non-contacting
- LEDs spacing: not less than 0.050in./1.27mm
- Air-gap: 1mm min. recommended
- LEDs must be turned on and tested one-at-a-time
- Probe tip lengths available/Part Numbers:
- Short (SL): 1.25in./28.5mm **PN: 250-13/T-12-SL-SA**
- Long (LL): 1.75in./44.4mm **PN: 250-13/T-12-LL-SA**
- Xtra long (XLL) 2.25in./57mm **PN 250-13/T-12-XLL-SA**

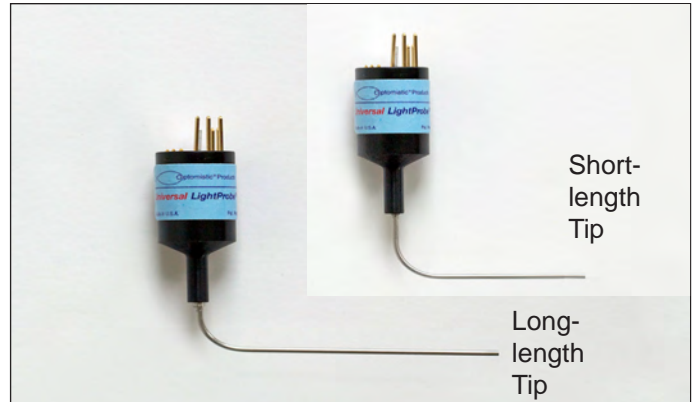
Universal LightProbe™ Small Aperture Fiber-Optic Probes

Small-aperture fiber-optic probes with **non-contacting tips** are available with right-angle tips and flexible cables, and with stainless steel encased right-angle tips.



Available
in Long-
length
Tip only

- Flexible cables: 3 x 9.84in./250mm long
- Probe tip diameter: 0.050in./1.27mm
- Probe tip type: right-angle stainless-steel, non-contacting
- LEDs spacing: not less than 0.050in./1.27mm
- Air-gap: 1mm recommended
- LEDs must be turned on and tested one-at-a-time
- Probe tip length/Part Number
- Long (LL): 1.75in./44.4mm **PN: 250T-12x12-RLL-SA**



- Right-angle stainless-steel encased probe
- Probe tip diameter: 0.050in./1.27mm
- Probe tip type: stainless-steel, non-contacting
- LEDs spacing: not less than 0.050in./1.27mm by rotating the sensors outward
- Air-gap: 1mm recommended
- Probe tip lengths (from bend to tip):
- Long (LL): 2.17in./55mm - **PN: XXX-12-RLL-SA**
- Short (SL): 1.50in./38mm - **PN: XXX-12-RSL-SA**

Small-aperture fiber-optic probes with **contacting tips** enable more refined intensity measurement. Contacting the the probe tip to the LED eliminates variations in intensity measurement which can be caused by variations in the working distance between the LED and the fiber-optic probe tip.



Available
in Long-
length
Tip only

- Flexible cable: 9.84in./250mm long
- Probe tip diameter: 0.050in./1.27mm
- Tip type: stainless-steel, contacting non-insulated spring tip
- LED spacing: not less than 0.083in./2.1mm
- Probe tip exterior diameter: 0.083in./2.1mm
- Extended probe tip length/Part number:
- Long (LL): 1.750in./43.2mm **PN: 250-21-LL-SA-CT**



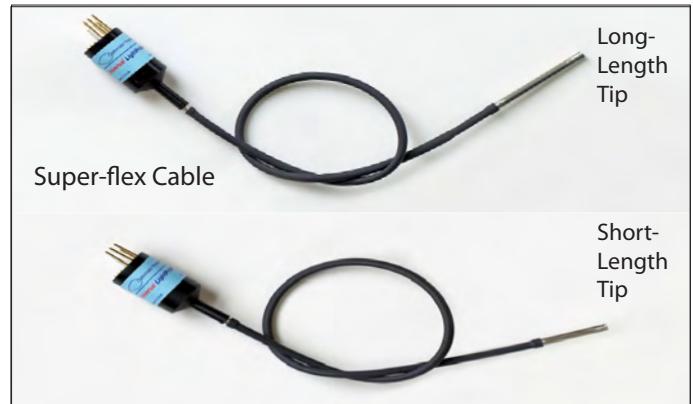
- Rugged flexible cable: 9.84in./250mm long
- Probe tip diameter: 0.134in./3.4mm
- Tip type: stainless-steel contacting, insulated spring tip
- LED spacing: not less than 0.134in./3.4mm minimum
- Extended probe tip lengths/ Part numbers:
- Long (LL): 2.34in./59.4mm **PN: 250R-34-LL-SA-CT**
- Short (SL) 1.29in./32.7mm - **PN: 250R-34-SL-SA-CT**

Universal LightProbe™ Wide-Aperture Fiber-Optic Probes

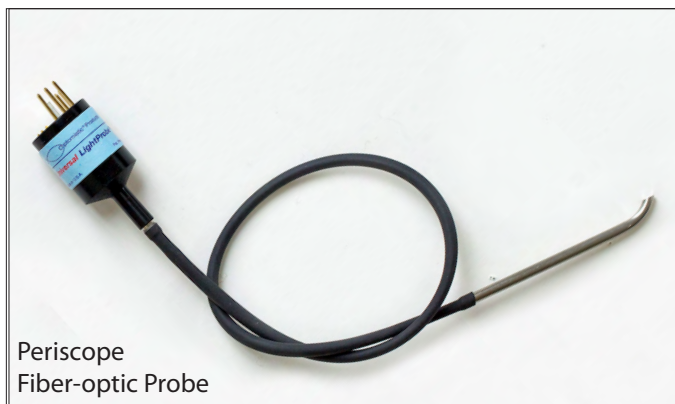
Wide-aperture probes with non-contacting stainless-steel tips are ideal for the test of dim or misaligned LEDs, as they allow 4x the amount of light input as small-aperture probes.



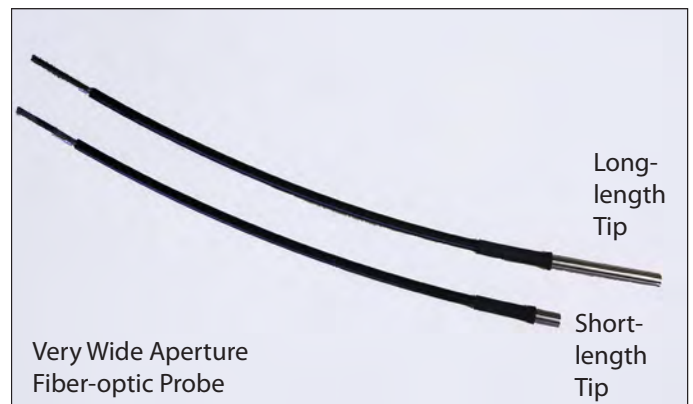
- Flexible cable: 9.84in./250mm long
- Probe tip diameter: 0.109in./2.77mm stainless-steel tip
- Probe tip type: non-contacting stainless steel
- LED spacing: not less than 0.109in./2.77mm
- Air-gap: 1mm recommended- up to 3mm to increase field of view when testing misaligned LEDs
- Probe tip lengths/Part numbers:
Short (SL): 0.325in./8.2mm - **PN: 250-27-SL-WA**
Long (LL): 1.375in./34.93mm - **PN: 250-27-SL-WA**



- Super-flexible cable: 9.84in./250mm long, with 0.25" bend radius
- Probe tip diameter: 0.109in./2.77mm stainless-steel tip
- Probe tip type: non-contacting stainless steel
- LED spacing: not less than 0.109in./2.77mm
- Air-gap: 1mm recommended- up to 3mm to increase field of view when testing misaligned LEDs
- Probe tip lengths/Part numbers:
Short (SL): 0.325in./8.2mm - **PN: 250SF-27-SL-WA**
Long (LL): 1.375in./34.93mm - **PN: 250SF-27-LL-WA**



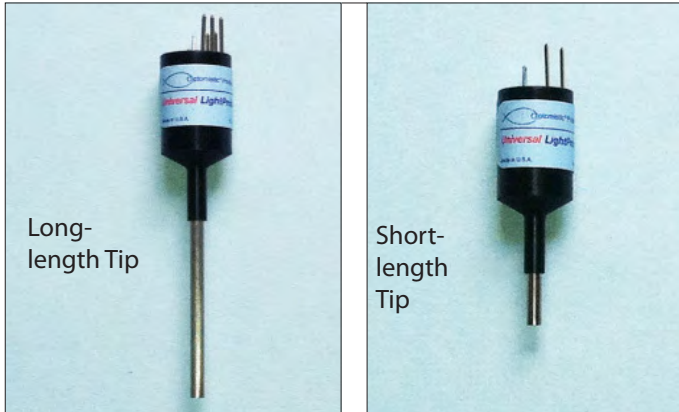
- Super-flexible cable: 9.84in./250mm long, with 0.25" min. bend radius without significant light loss
- Probe tip diameter: 0.109in./2.77mm stainless-steel tip
- Probe tip type: Periscope for side-facing LEDs, non-contacting stainless steel
- LED spacing: not less than 0.109in./2.77mm
- Air-gap: 1mm recommended- up to 3mm to increase field of view when testing misaligned LEDs
- Probe tip lengths/Part numbers:
Long (LL): 1.75in./44.45mm **PN: 250SF-27-RSLL-WA**



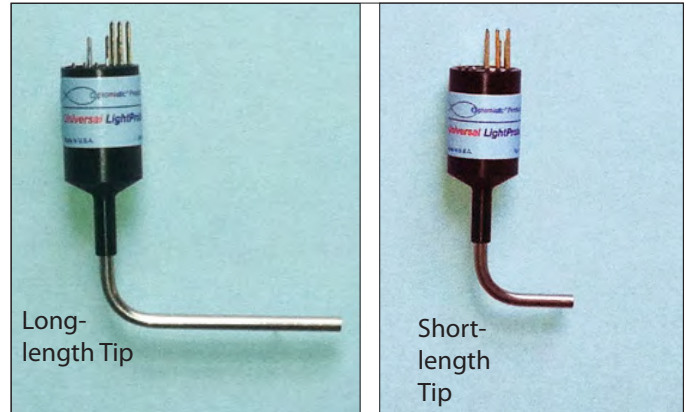
- Semi-flexible cable: 6in./152mm long, 2" bend radius minimum, without significant light loss
- Probe tip diameter: 0.145in./3.7mm stainless-steel tip
- Probe tip type: non-contacting stainless steel
- LED spacing: not less than 0.145in./3.7mm
- Air-gap: 1mm recommended- up to 3mm to increase field of view when testing misaligned LEDs
- Probe tip lengths/Part numbers:
Long (LL): 1.375in./34.93mm - **PN: 152-37-LL-VWA**
Short (SL): 0.325in./8.2mm - **PN: 152-37-SL-VWA**

Universal LightProbe™ Wide-Aperture Fiber-Optic Probes with Non-contacting Tips

Wide-aperture probes with non-contacting stainless-steel tips are ideal for the test of dim or misaligned LEDs, as they allow 4x the amount of light input as small-aperture probes.



- Stainless-steel encased probe
- Probe tip diameter: 0.109 in./2.77mm
- Probe tip type: stainless steel
- LED spacing: not less than 0.56in./14.22mm, the width of the sensor
- Probe tip lengths/Part numbers:
 Short (SL): 0.395in./10mm - **PN: XXX-27-SL-WA**
 Long (LL): 1.47in./37.3mm - **PN: XXX-27-LL-WA**



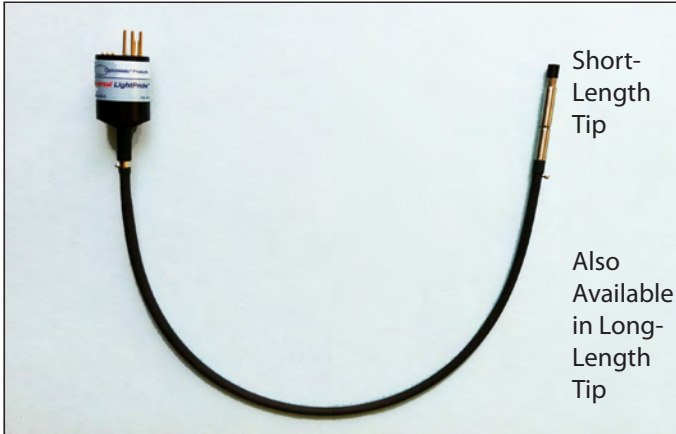
- Stainless-steel encased probe
- Probe tip diameter: 0.109 in./2.77mm
- Probe tip type: Right-angle, stainless steel
- LED spacing: not less than, 0.109in./2.7mm, by rotating the sensors outward
- Probe tip lengths/Part numbers:
 Short (SL): 0.375in./9.5mm - **PN: XXX-27-RSL-WA**
 Long (LL): 0.134in./34.9mm - **PN: XXX-27-RLL-WA**

The right-angle probes allow the sensors to rotate and therefore be placed in close proximity to each other as shown below.



Universal LightProbe™ Wide-Aperture Fiber-Optic Probes with Contacting Tips

Wide-aperture fiber-optic probes with contacting and insulated spring-tips, enable more refined intensity measurement by eliminating the variations in the distance between the LED and the fiber-optic probe tip.



Short-Length Tip

Also Available in Long-Length Tip

- Flexible cable: 9.84in./250mm long
- Probe tip diameter: 0.134in./3.4mm stainless-steel tip
- Probe tip type: stainless steel with contacting insulated spring tip
- LED spacing: not less than 0.134in./3.4mm
- Probe tip lengths/Part numbers:
Short (SL): 1.29in./32.7mm - **PN: 250-34-SL-WA-CT**
Long (LL): 2.34in./59.4mm - **PN: 250-34-LL-WA-CT**



Short-Length Tip

Long-Length Tip

- Super-flexible cable: 9.84in./250mm long, with 0.25" min. bend radius without significant light loss
- Probe tip diameter: 0.134in./3.4mm stainless-steel tip
- Probe tip type: stainless steel with contacting insulated spring tip
- LED spacing: not less than 0.134in./3.4mm
- Probe tip lengths/Part numbers:
Short (SL): 1.29in./32.7mm - **PN: 250SF-34-SL-WA-CT**
Long (LL): 2.34in./59.4mm - **PN: 250SF-34-LL-WA-CT**



Short-Length Tip

Long-Length Tip

- Stainless-steel encased probe
- Probe tip diameter: 0.134in./3.4mm stainless-steel tip
- Probe tip type: stainless steel with contacting insulated spring tip
- LED spacing: not less than 0.56in./14.22mm, the width of the sensor
- Probe tip lengths/Part numbers:
Short (SL): 0.395in./10mm - **PN: XXX-34-SL-WA-CT**
Long (LL): 1.47in./37.3mm - **PN: XXX-34-LL-WA-CT**



Long-Length Tip

Short-Length Tip

- Stainless-steel encased probe
- Probe tip diameter: 0.134in./3.4mm stainless-steel tip
- Probe tip type: Right-angle, stainless steel with contacting insulated spring tip
- LED spacing: not less than, 0.134in./3.4mm, by rotating the sensors outward
- Probe tip lengths/Part numbers:
Short (SL): 1.29in./32.7mm - **PN: XXX-34-RSL-WA-CT**
Long (LL): 2.34in./59.4mm - **PN: XXX-34-RLL-WA-CT**

Universal LightProbes™ - Which Is Best For Your Test?

These charts outline which sensor and fiber-optic probes are best used for different LED tests.

Universal LightProbe Sensors	Test 5 Main LED Colors + White (color binning)	Test Any Color in Visual Spectrum (400 - 700nm) + White	Single Color Test	Intensity Test	ON/OFF Test (in-sensitive to color)	Test Infrared 700nm to 1,000nm	Test UV 365nm to 400nm	Test Very Bright LEDs	Test Very Dim LEDs	Analog Output	Digital Output	Serial Digital Output/ USB Interface
Penta	X			X						X		
Penta High Sensitivity	X			X					X	X		
Spectra		X		X						X		
Spectra USB		X		X								X
Unicolor			X	X		X	X			X		
Unicolor Digital			X								X	
Blinx Digital					X						X	
Blinx Digital High Sensitivity					X				X		X	
Ultra High Sensitivity					X				X		X	
Low Sensitivity - available for most sensor types								X				
Very Low Sensitivity - available for most sensor types								X				

Universal LightProbe Fiber-Optic Probe Type	Test closely spaced LEDs - 0.050 inch on center	Test Two or Three LEDs with a Single Sensor (requires ability to turn LEDs on one-at-a-time)	Compensate for Mis-alignment of Probe Tip to LED	Test Dim LEDs	Requiring Refined Intensity Test	Difficult to Access LEDs	Test Side-Facing LEDs	Install Sensor without Clamps
0.050in/1.2mm Diameter Small Aperture Probes Non-contacting tips	X							
0.050in/1.2mm Diameter Duplex and Trident Small Aperture Probes Non-contacting Tips	X	X						
0.109 in/2.7mm Diameter Wide-Aperture Probes Non-contacting tips			X	X				
0.134 in/3.4mm Diameter Wide-Aperture Probes Contacting tips				X	X			
0.145 in/3.7mm Diameter Very Wide Aperture Non-contacting tips				X		X		
Super-flexible Wide Aperture Probes						X		
"Periscope" Wide-Aperture Probe							X	
Stainless Steel Encased Fiber-optic Probes								X

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